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ABSTRACT

The discrepancy between aspiration and achievement of institutional goals is analyzed as an important variable in monitoring an innovation through its life cycle from exploration to institutionalization. Although important, this discrepancy, or hiatus, is not sufficient to support an innovation without the concurrent presence of high aspiration toward the same goal. The use of magnitude estimation scaling is explored as a step toward determining the goal hiatus force of a particular goal, this force being one of the three classifications of influence earlier developed by Martorana and Kuhns as part of their interactive forces theory. The current status of some of the innovations described in "Managing Academic Change" is noted, as well as ongoing and future research directed toward the hypotheses emerging from the use of certain institutional goals as a focal point for promising change. (Author/MSE)

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ABSTRACT

This paper analyzes the discrepancy between aspiration and achievement of institutional goals as an important variable in monitoring an innovation through its life cycle from exploration to institutionalization. Although important, this hiatus is not sufficient to support an innovation without the concurrent presence of a high level of aspiration associated with the same goal. The use of magnitude estimation scaling was explored as a step toward determining the goal hiatus force of a particular goal, this force being one of the three classifications of influence earlier developed by Martorana and Kuhns as part of their interactive forces theory. The current status of some of the innovations described in Managing Academic Change was noted, as well as ongoing and future research directed toward the hypotheses emerging from the use of certain institutional goals as a focal point for promising change.

ANALYZING A FORCE FOR CHANGE: DISCREPANCY BETWEEN ASPIRATION AND ACHIEVEMENT OF INSTITUTIONAL GOALS

Institutional goals are important reference points for identifying potentially successful innovations and for monitoring the progress of these changes through their several "life cycle" stages. These propositions were explored by the co-authors in twenty case studies presented in their 1975 volume, Managing Academic Change. This paper reports on the continuation of this research, including the use of magnitude estimation scaling for estimating the level of aspiration and level of achievement for specific institutional goals and the relation of these levels to the progress of a particular change toward its institutionalization. It also gives a status report on some case studies from the book to illustrate hypotheses about institutional goals emerging from the original study and discusses further research under way for a continuing exploration of these hypotheses.

The value structure of any institution includes a formal or informal ranking of goals which results in a hierarchy of aspirations or priorities in the institution. For a particular goal, the level of performance at which knowledgeable persons believe "the institution" would like to be is termed its "level of aspiration." Their view of current accomplishment is termed its "level of achievement" for that goal. At any given time the gap between the two levels is termed "goal hiatus," which refers to the discrepancy between the aspiration toward a particular institutional goal and the achievement of that goal.

According to the interactive forces theory of change developed earlier by the co-authors, the force related to this goal hiatus is one of three major categories of influence affecting change in an institution, the other two being "personal" and extrapersonal" categories. Personal forces are of three kinds: those of decision-makers, implementors, and consumers. Extrapersonal

forces include tangible influences such as land, facilities and equipment, and intangible ones such as academic and community policies, traditions, laws and so on. The theory also recognizes the progression or "life cycle" of an innovation through five stages: exploration, formulation, trial, refinement and finally institutionalization (Martorana and Kuhns, 1975, p. 179).

As noted by the co-authors in their 1975 book,

> Change is driven or energized by the result of effect of all interactive forces: personal, extrapersonal, and goal hiatus. From this the interactive forces theory develops a series of postulates as follows:
>
> 1. These three forces are identifiable, separable, and describable, and their individual impact on an innovation in both strength and direction (either negative or positive) is to some extent predictable.
>
> 2. These forces interact in ways which tend to reinforce or cancel their effect on the viability of the innovation; hence the label <u>interactive</u>.
>
> 3. Academic innovations, like other changes, display an identifiable growth or maturation pattern -- in effect, a 'life cycle' of developmental stages resulting from the interplay of forces over a period of time. The continuum can be divided into...developmental stages: <u>exploration</u>, <u>formulation</u>, <u>trial</u>, <u>refinement</u>, and <u>institutionalization</u>...
>
> 4. The momentum of support for the innovation derived from all positive forces must outweigh the negative forces at each stage of development if the innovation is to progress to total institutionalization rather than stagnating for an undue time at an earlier stage or being terminated.
>
> 5. Specific forces have different importance at different developmental stages. For example, a decision maker may have a vital role to play during the exploration stage, while

an implementor may have much greater importance during the trial stage.

6. The strength of the goal hiatus force derived from a given stated institutional goal is directly related to the aspiration or priority position given the goal in comparison with others; this is to say that a goal hiatus of certain value attached to a high aspiration or priority goal generates greater energy for change than that same hiatus value would if attached to a goal of lesser aspiration or priority position (Martorana and Kuhns, 1975, pp. 179-80).

It follows that a change related to a goal with a high level of aspiration is more likely to become institutionalized at a college or university than is a change related to a goal with a low level of aspiration. This movement toward institutionalization of a proposed change is also facilitated by a large discrepancy between the goal's level of aspiration and level of achievement. Level of aspiration appears to be more important to this thrust than the hiatus between aspiration and achievement, but the two appear to work in concert.

If an innovation is to progress toward institutionalization, the most favorable condition (for the associated goal or goals) appears to be one of "aspiration level high, hiatus between aspiration and achievement large." Under these circumstances the goal hiatus force provides considerable support for the innovation. When the level of aspiration is extremely high, even though the discrepancy between aspiration and achievement is relatively small, the goal hiatus force still may be substantial. On the other hand, when the level of aspiration shows a value only slightly lower, an innovation's goal hiatus force rapidly diminishes if the aspiration-achievement discrepancy remains small. That is, when there is little discrepancy between aspiration and achievement levels for a particular goal, the aspiration level can provide support for moving an innovation forward only when that

level is extremely high; for any lower aspiration level, a larger discrepancy between aspiration and achievement is a necessary condition to this thrust.

Finally, the converse of this aspiration-discrepancy relationship apparently does not hold true. That is, even a substantial discrepancy between goal aspiration and achievement does not appear sufficient to move an associated innovation toward institutionalization unless the goal's level of aspiration is among the top few for that college or university (or other academic unit under consideration).

CHANGE REVISITED

Five years ago some 25 persons knowledgeable about innovations in a variety of institutions were asked to write a section in our then forthcoming book on managing academic change. The interactive forces theory crystallized out of this experience. Concurrently, initial procedures for measuring the three types of forces (personal, extrapersonal and goal hiatus) were developed through pilot runs involving several other institutions.

In recent months we have discussed with these contributing authors the status of the innovations they described earlier, asking them to comment on the personal, extrapersonal and goal hiatus forces thought to be responsible. Following are some general observations about four of these change situations.

Two of the innovations have survived while two have disappeared or changed substantially. Each set of two will be described in turn; for this purpose they will be designated the "surviving innovations," and the "nonsurviving innovations."

Surviving innovations. Institutional goals associated with the innovations at these two institutions were and are highly aspired to by

those in various role positions. The contributing author at one of them noted that the conservatives at his institution are on the side of the innovation, that the title used for the innovation is an "honorific term," and that "board members and board candidates sound the same" in their praise of this innovation. For this innovation the hiatus between aspiration and achievement for the associated goal is barely observable. So much has been accomplished that another college unit utilizing this innovative approach is being established this year, and nearby institutions are emulating the change.

The situation is comparable but somewhat different at the second surviving innovation's institution. As in the first case, the innovation was one affecting the entire college and was a bold new approach to postsecondary education. Associated goal aspiration is still high, but in this case the hiatus between level of aspiration and level of achievement is greater. Although the approach itself is now institutionalized, it is generally acknowledged that work still must be done to perfect the model. This work is proceeding, with the help of an ongoing well-organized evaluation of what happens to the students in this type of education. In turn, these findings are being returned to the classroom for ever more effective teaching-learning.

At this second institution there are some clouds in the sky within the category of extrapersonal forces. These could hold the balance in spite of substantial positive forces from the personal and goal hiatus categories of influence. Among these extrapersonal forces are inflation and related difficulties in funding, and attrition exacerbated by the enrollment picture elsewhere which has opened desirable transfer spots in institutions which originally would not consider these students for a special reason related to the innovation. Also, the very fact of institutionalization of the innovation's concept may result in less funding from interested foundations, whose money may now go to other new ideas.

Nonsurviving innovations. The two illustrations of nonsurviving innovations occurred in institutions at both ends of the spectrum with respect to complexity, selectivity, public or private funding, size, and so on. Under new leadership the first institution set forth a bold new plan for uniting faculty accountability and student learning. For a time the innovation progressed through the early stages of its life cycle, going through the exploration, formulation, and trial stages. Just into the refinement stage serious problems emerged, apparently not unrelated to the fact that the goals of the institution appear to have been modified. The innovation was no longer supported by a college goal with a high level of aspiration. Though the hiatus between aspiration and achievement of this goal was still substantial, this was inconsequential considering the shift in goal aspiration.

In the fourth case, that of another nonsurviving innovation, again the aspiration level for the associated institutional goal changed, or more accurately, reverted to its former reality which had been somewhat diverted by the campus chaos and compassion for the community which were characteristic of the sixties. Parts of the innovation survive; on examination these turn out to be associated with high priority goals in the organizational subunits now sponsoring them, all of which at present relate to the institution under discussion in a cooperative but autonomous fashion. The portions of the innovation which did not survive simply did not have the support of a goal with a continuing high level of aspiration, in spite of the fact that there was a substantial hiatus between aspiration and achievement of the goal in question. The extrapersonal force of fiscal crisis is the official reason given for the demise of this integral part of the original innovation, but there is also reason to believe that the traditionalists within the personal forces, temporarily less of a negative force following the crises of the sixties, again exercised this negative force in later years.

The descriptions of these four cases have been left deliberately vague and generalized since it is not possible to present all of the salient points in this short presentation. Nevertheless, certain features emerge, which may be summarized thusly: At least for the two surviving innovations, they are still supported by institutional goals for which the level of aspiration is high; the hiatus between aspiration and achievement is there in both cases, but in differing degree. In the most completely institutionalized innovation both the personal forces carrying out varying roles are supportive, and the extrapersonal forces such as adequate budget are also positive. In this instance the personal and extrapersonal forces may compensate for the force which might be expected from a discrepancy between goal aspiration and achievement. In the other surviving innovation case the hiatus is greater, but some extrapersonal forces such as money and external transfer policies are beginning to take on a negative valence. The nonsurviving innovations in part were the victims of changing institutional priorities, which eliminated the crucial source of support. Extrapersonal forces, such as changes in community and faculty attitudes in the late seventies, altered essentially positive forces to neutral or negative forces. In both situations some of the leadership personnel departed, and the innovations collapsed in whole or in part. These leaders represented very positive personal forces in the earlier period.

These revisited case studies support the postulates and hypotheses earlier quoted from the book Managing Academic Change, but at this point they are merely waystations toward more controlled analysis of some of the other cases in the book, and new cases which are being added. This latter development is described further at the conclusion of this paper.

MAGNITUDE ESTIMATION SCALING

This paper also introduces the use of magnitude estimation scaling for establishing the level of aspiration and level of achievement for an institution's goals. This procedure was used earlier in extensive psychophysical research, more recently in criminal justice and political studies and other social consensus scaling (Stevens, 1975; Sellin and Wolfgang, 1964). It shows promise in providing practical assistance to administrators and other decision makers who are responsible for planning and monitoring change in order to carry out the institution's goals. Those not familiar with this approach will find an excellent overview and bibliography in S.S. Stevens' 1975 volume Psychophysics, edited posthumously by the daughter of this research pioneer. As Stevens notes,

> Magnitude measures derive from direct cross-modality matching of magnitude or degree on one continuum to the same aspect on another. One of the continua may be the number continuum. The ability of the typical observer to make such direct matches has become the well-documented theme of the new psychophysics. The typical observer's capacity for magnitude matching is generally far greater than some experimenters have seemed willing to believe (Stevens, 1975, p. 230).

The first step toward achieving institutionwide goals occurs when they are translated into objectives -- sometimes innovations -- for the organizational units, such as departments, divisions, offices, standing committees, and so on. The objectives advanced by each of these operating units constitute the means through which the institution's goals are accomplished. Some of these objectives will be continuing or sustaining, and some will be innovative approaches to goal achievement. These

objectives provide the strategies around which a number of activities can be organized by the operating unit. The objectives should be measurable, have a time line, and include designation of leadership responsibility. The operating unit may need to alter both objectives and activities planned to carry them forward if they prove ineffective in carrying out the institutional goal or purpose intended.

Given the mission of the institution, some goals are thought by knowledgeable persons to be more important than others. That is, the "level of aspiration" for certain goals is determined to be higher than it is for others. Magnitude estimation scaling is utilized by the co-authors in helping institutions determine this level of aspiration. In like manner, at any point in time some institutional goals are more nearly achieved than others; that is, their "level of achievement," also measured by magnitude estimation scaling, is higher.

These judgments of knowledgeable people about the relative importance of institutional goals provide one basis for operating unit decisions as to program priorities and use of available resources. Likewise, for such decisions it is useful to have information about the extent to which a goal has been achieved. Finally, a goal judged to be very important and yet accomplished only minimally, that is, one determined to have a large discrepancy between level of aspiration and level of achievement, should become a focal point for attention by the institution's operating units. This is fertile ground for innovations, particularly if a monitoring of personal and extrapersonal forces shows them to be essentially positive toward the change suggested. Objectives (including innovations) associated with a goal judged to be very important, but hardly achieved at all, should have higher priority than objectives associated with a goal of equal importance but largely achieved already.

A guiding principle in the co-authors' work with institutions is to leave in place a set of simple procedures by which institutional personnel

can continue to assess institutional goals and monitor change associated with their achievement. These procedures have been carried out and continuously refined in public and private colleges and universities and in organizations with an educational component. Essentially, magnitude estimation scaling is used to establish levels of aspiration and achievement, and thus to provide data for a matrix through which the contribution of personal, extrapersonal and goal hiatus forces to an innovation's progress toward institutionalization may be monitored. For purposes of this paper, no further attention will be given to the measurement of personal and extrapersonal forces, or to the interaction of all three types of forces at any given developmental stage, but it should be understood that this omission occurs only in the interest of brevity.

Our work with a professional school in a private research university will be used to illustrate the procedure for obtaining the level of aspiration and achievement for a set of goals through magnitude estimation scaling. In this case the goals of the School were identified rather than the goals of the entire university. The subunits within the School, that is, the departments, offices and standing committees, will utilize this goal assessment as a basis for their objectives, for their innovations, each designed to accomplish the School's goals.

The goal statements themselves were obtained from the University catalog and from goal statements recently prepared by department chairmen. Twenty five such statements were presented to a doctoral class in research design for a complete pilot run, and after some modification this list of goal statements were presented to the School's full-time faculty with this kind of instructions:

> 1. There is no relationship between a goal's place on the list and its importance to the School. Your help is needed to establish that relationship. On the Goal Statements form attached, note the goal for which a value of 100 has already been entered. This statement will be your reference base or anchor point. For each other goal enter a value

in the column marked "ASP" (for aspiration) to show the School's aspiration for its accomplishment (this is to be your perception of the School's aspiration for this goal, not your own aspiration if it happens to be at variance with the School's aspiration). If you consider the goal to be more strongly aspired to, your entry should be more than 100, for example 200 if twice as much, 300 if three times, etc. If you consider it less strongly aspired to, your entry should be less than 100, for example 50 if half as much, 10 if a tenth as much, and so on. Please do not use a zero for any value.

2. When you have finished entering your values for goal aspiration, return to the top of the Goal Statements form. In the column marked "ACH" (for achievement) enter a value to show your perception of the School's achievement of the goal currently. This time for each goal you will use as your reference base or anchor point the aspiration level you have already indicated for that particular goal. That is, for each goal, using as the anchor point the level of aspiration you indicated in the ASP column, enter the value for its relative achievement in the ACH column. If you consider the goal to be equally achieved (in comparison with the level of aspiration you indicated) your entries for ACH and ASP should be identical. If you consider that goal to be more fully achieved than aspired to, your entry for achievement (ACH) should be higher than that for aspiration (ASP). The ACH value should be lower than its ASP value if you consider the goal to be less fully achieved than aspired to. Continue this process through all goals.

Although this research design utilizes a common modulus (100), Stevens stresses the advantages of allowing each respondent to select his own standard, stating that "free number matching with no designated standard has proved to be a simple and effective way to elicit an unconstrained quantitative judgment from a subject (Stevens, 1975, p. 252)." If the range of responses is very great for some of the raters and very small for others, it may be advisable to normalize the data. A simple procedure for accomplishing this is described by Stevens (p. 289). It should also be noted that since magnitude estimates are ratios the geometric rather than the arithmetic mean is the preferred measure of central tendency.

The mean aspiration value for each goal, and thus its level of aspiration, may now be obtained. The mean level of achievement is not determined directly, but instead a measure of average hiatus or discrepancy between a goal's aspiration and achievement has been developed. To do this the aspiration values for all respondents for all goals are standardized and the corresponding achievement values adjusted proportionately. This procedure permits measurement of the aspiration-achievement discrepancy per se, as distinct from the measurement of aspiration and achievement levels.

For each goal, (1) the level of aspiration, (2) the level of achievement, and (3) the corresponding hiatus measure, all based on the individual respondents' assigned values, are needed to carry out the formula for determining the "goal hiatus force." The formula for this force appears in Managing Academic Change (Martorana and Kuhns, 1975, p. 200). Although the type of measurement illustrated in the book differs along several dimensions from magnitude estimation scaling, the formula is equally useful with either measurement approach. It is our hypothesis that (1) goals with relatively high values for the goal hiatus force are the most promising focal points for the encouragement of change, and that (2) high values for the goal hiatus force occur only when the goal shows both a high level of aspiration and a high level of goal hiatus -- those two

things in combination -- with an occasional but predictable exception. In every case noted so far, the exception has been a goal showing a top level aspiration (for example, third or fourth out of twenty five), even though the hiatus level was relatively low. This bears out the earlier statement that in order for the goal hiatus force to be maximal, the level of aspiration must be high, and the size of the hiatus must be large, but within the range of possibilities the aspiration level itself rather than the size of the hiatus is more controlling in influencing the level of the goal hiatus force.

The goal hiatus force for a particular goal is obtained through a formula which includes for each rater the ASP value, the difference between the ASP and ACH values, the maximum ASP value given by any respondent, and likewise the minimum ACH value in the data set.

As a final step, for each goal these three values are plotted together: (1) the aspiration level, (2) the hiatus level, and (3) the goal hiatus force. A typical pattern emerges from each such plotting. To assist in understanding these relationships, visualize a figure showing in the upper right quadrant the coordinates for the goals with high levels of aspiration (vertical axis) and high levels of hiatus or aspiration-achievement discrepancy (horizontal axis). At the right margin of the figure, superimposed as a kind of third dimension, are the values for the goal hiatus force, with the higher values at the top of the figure. Each of the goals with coordinates in the upper right quadrant (high aspiration, large hiatus) have "lines" leading to the top of this goal hiatus force range. One other goal, found in the upper left quadrant, also shows a line leading to a relatively high point (fifth) on this goal hiatus force range; this goal has a level of aspiration value which is fifth out of twenty seven, although the hiatus level is relatively low, twenty third out of twenty seven. Characteristically in other data sets as well, there is one goal with coordinates in the upper left quadrant (and a "line" leading to a top value on the goal hiatus force range), while the rest of the goals associated with top level goal hiatus force values are located in the upper right quadrant on the

figure, where they represent high levels of both aspiration and discrepancy between aspiration and achievement.

THE FUTURE

Working backward from empirical situations, it is our observation that the most promising focal points for innovations are those goals showing a high value for the goal hiatus force. (As indicated above, consideration of potential personal and extrapersonal forces at this point would be mandatory in a "real life" situation.) Normally these goals are associated both with high levels of aspiration and with a substantial hiatus between aspiration and achievement. Taking these relationships as the basis for hypotheses, longitudinal studies are now needed to determine whether over a range of institutional types, a range of time periods and a range of innovations, a goal associated with a relatively high goal hiatus force is indeed the most fertile ground for innovations which proceed through their life cycles to institutionalization.

This research design is being carried out, and preliminary arrangements are being made for adding other institutional participants. From the institution's standpoint, participation brings assistance in monitoring change, very necessary if the change is to survive, as illustrated by the revisits to innovations described in our earlier book. This approach also provides for them a link between institutional mission, goals, and objectives for operating units, such as departments, offices and standing committees.

SUMMARY

This paper analyzes the discrepancy between aspiration and achievement of institutional goals as an important variable in monitoring an innovation through its life cycle from exploration to institutionalization. Although important, this hiatus is not sufficient to support an innovation without the concurrent presence of a high level of aspiration associated with the same goal. The use of magnitude estimation scaling was explored as a step toward determining the goal hiatus force of a particular goal,

this force being one of the three classifications of influence earlier developed by the co-authors as part of their interactive forces theory. The current status of some of the innovations described in Managing Academic Change was noted, as well as ongoing and future research directed toward the hypotheses emerging from the use of certain institutional goals as a focal point for promising change.

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